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ORIGINAL ARTICLES.

A CASE PRESENTING REPEATED BURNS OF THE CONJUNCTIVA, SELF-INFLICTED.*

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On July 13th, 1908, Sister A., a postulate in one of our charitable institutions, was referred to me on account of what seemed to be a mild form of catarrhal conjunctivitis. I ordered a drop of a ten per cent. argyrol solution to be instilled three times a day. Two days later when she came to my office, the left eye showed several small irregular shaped white burns on the conjunctiva of the lower lid. One of the spots extended over the lid margin to the skin. I wrote a note to the Sister in charge of the case telling her to get a fresh solution and a fresh dropper, as she had in some way burned her patient's eye. I went to the hospital that afternoon and made a careful investigation of the solution, the dropper and the nurse, but could get no explanation of the peculiar appearance of the patient's left lower lid. However we substituted fresh material and I felt that such a mysterious accident could not happen twice, and dismissed the subject from my mind. After four or five days' treatment, the spots faded out and restoration to the normal seemed imminent. The right eye, in the meantime, had recovered from the conjunctivitis.

On July 20th the patient came again with several large white patches on the right lower lid. The bulbar conjunctiva was injected and the lids were swollen. The patches presented an appearance which could only have been produced by some caustic.

*Read before the Ophthalmic Section of the St. Louis Medical Society, October 14th, 1908.

The largest burn was on the lower lid near the inner canthus. I questioned her closely but could get no information except that she woke up that morning with the right eye as I saw it. I was convinced that she knew more of the cause than she would tell, and concluded that she was applying carbolic acid or some similar, easily procured caustic. I had Dr. Houwink, Dr. Hughes and Dr. Semple to see her and we all agreed that the lesion was a self-inflicted burn. Feeling that she would soon tire of this unusual form of amusement, now that she had tried it in both eyes, I did nothing except to order argyrol solution three times a day and insist that she be kept at her usual work, which was in the kitchen. I saw her every other day, and the last attack gradually subsided as the previous one had. It was nearly well when one day she appeared with the right eye freshly injured and more seriously than ever before. This time the white patch extended from the middle of the lid to the caruncle and up on the ball to the cornea involving the whole lower nasal quadrant. The burns before had never involved the ocular conjunctiva and were not deep enough to leave any dangerous scarring of the mucous membrane. I had therefore never felt any solicitude as to the final recovery, but this time I saw there would necessarily be considerable symblepharon and I realized that she might destroy her eye, if not thwarted in her purpose.

On August 24th, I had Dr. Luedde look at the case and take smears from the necrotic area. His report is as follows:

"The smear taken from the necrotic area of the lower lid of Sister A.'s right eye, August 24, shows broken down tissue with a few fibrous shreds. No histological detail or bacteria demonstrable."

He agreed with me that the lesion was a burn. I now felt it my duty to take the matter up with the patient's superiors and called the three leaders of the order in consultation. I told them of my conclusions and was greatly surprised to find that they all agreed. I was then informed that the patient had cut her arm over two years ago, and that her surgeon had had the greatest difficulty in getting it well. The history of this injury, as given by the Mother Superior, is as follows: Over two years ago, the patient claimed to have cut her left wrist in lowering a window sash, when the glass broke. The original cut was a small matter, but, instead of healing, the wound gradually extended up the arm. From this wound the surgeons were constantly removing pieces of broken glass. The

wound would seem to close up and would mysteriously reopen. This process was kept up for nearly two years, by which time there was a long granulating sore extending from the wrist to above the elbow. When dressing it one day, the surgeon found a hairpin lying in the bottom of the wound above the elbow. After this episode, the dressings were made of such a nature as to prevent any interference on the part of the patient. Recovery thereafter being normal.

I arranged with the Mother Superior to have the patient and her surroundings searched, and then to have her isolated and kept under strictest surveillance. When accused of tampering with her eyes, she flatly and sullenly denied it. However, since her isolation, the recovery has been rapid and consistent and no relapses have occurred. There is now a cicatrizing scar which will in time cause adhesion of the lower lid to the ball as far up as the cornea.

I report the case with hesitation, fearing it will not be of sufficient interest to warrant the appropriation of time necessary for its presentation. The only indication I have pointing to its interest, is my personal experience, having never had a similar case in 14 years of ophthalmic practice. We are aware that self-mutilation is often practiced by the insane, especially the melancholic, also that the hysterical will resort to this method of exciting sympathy or concentrating attention upon themselves. The malingerer will at times subject himself to shocking mutilation to secure reward or escape punishment. The demented patient will not conceal his part in the crime, but will often take great pleasure in being its author. The hysterical and the malingerer will, for obvious reasons, conceal the source of their affliction. We frequently meet the patient who manifests disappointment when assured that his disabilities are of no consequence. Also the one whose countenance is wreathed in smiles when assured that he has a serious malady. Is the mental attitude of these the same as that of the self-mutilator, differing only in degree? In one there is a desire for a serious disability, in the other this desire is strong enough to result in auto-induction. If this mental attitude is the same, the diseased condition under discussion, is a much more common one than we would, at first thought, believe.

I do not believe, however, that the eye is often selected as the medium for the exhibition of this perversion. I have not been able to find any report of similar cases except a case of self-

enucleation of the eye-ball reported by Noyes in the Ophthalmic Record of March, 1907. Dr. Noyes found three other similar cases in our literature. Three out of four cases found justification for their act in the scriptural injunction, "And if thine eye offend thee, pluck it out and cast it from thee."

ON CONJUNCTIVAL CYSTS AND PAPILLOMATA.*

By ADOLF ALT, M.D.,
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Nearly every writer on conjunctival cysts divides them into lymphatic cysts, glandular cysts and cysts by inclusion. To these are added cysts caused by entozoa which, however, do not seem to have been observed in this country.

Lagrange in his large text-book on the tumors of the eye, orbit and annexes (Vol. I, p. 19) starts out by saying that cysts of the conjunctiva are frequent. Yet, my personal experience would not seem to confirm this statement, as I can remember having seen but 4 cases of conjunctival cyst in more than thirty years of practice. From the literature it seems, furthermore, that most authors report on a few cases only (3 or 4) except Delecoeuillerie, who reported on 7 cases of his own.

In the August number of this year of the *Archives d'Ophthalmologie* C. Cabannes reports 3 cases of his own and makes an attempt to find the origin of the cysts by examining the cells of their fluid contents. It so happens that in the August number of the *Klinische Monatsblätter fuer Augenheilkunde* Cosmetatos also reports a case of conjunctival cyst. This prompted me to look over the specimens of my older cases to which only a few months ago a new one was added.

Among the conjunctival cysts so far observed the lymphatic and glandular ones seem to have been the most frequent ones.

The lymphatic cysts which usually lie on the nasal side of the eyeball in the bulbar conjunctiva between the caruncle and the cornea or in the fornix, seem to take their origin from pre-existing lymphvessels. Why they appear is not exactly known, but it seems that they start from lymphangiectasæ. When the walls between these small enlarged lymphvessels break down and thus

*Paper read and specimens demonstrated at the meeting of the Ophthalmic Section of the St. Louis Medical Society, October 14th.

one larger cavity is formed and closed off, a lymphatic cyst results. Such cysts usually contain a clear, uncolored fluid and are movable with the conjunctiva. Their shape is mostly round or ovoid. They rarely obtain such a size that they become annoying to the patient. Simply removing them with the scissors is all that is necessary.

The histological examination has sometimes shown some smaller cysts besides a larger one. The interior of such cysts is usually covered with an endothelial coat of flat cells which in most cases form only one or two layers, when the section is exactly at right angles to the wall. Where it appears as if there was a larger number of layers the section is usually oblique.

Cabanne draws attention to the fact that in the contents of such lymphatic cyst a considerable number of leukocytes and especially of lymphocytes may be found (as in his case). He thinks that by puncturing such a cyst and examining its contents the origin of the cyst might be made clear.

The glandular cysts are found most frequently in the upper or lower fornix and rarely in the bulbar conjunctiva. Their size varies, of course, but it is usually larger than that of the lymphatic cysts lying in the bulbar conjunctiva, because the glandular cysts are covered by the lids and are not observed so easily. They are, also moveable. They may be colorless or slightly yellow in appearance. Cabanne finds an especially large proportion (30%) of "alveolar" cells in these cysts by which he thinks they can be recognized.

It is the general opinion that such cysts take their origin from Krause's glands or so-called Henle's glands and are probably due to inflammatory affections, perhaps to traumatisms. In other cases they were thought to take their origin from abnormal glands in the conjunctiva.

The characteristics of their epithelium are that there are several layers of cells usually more cylindric near the base, more flattened toward the interior.

The rarest conjunctival cysts are those by inclusion which are always due to an injury or an operation and show the same changes which we find wherever live epithelial cells have become enclosed in other tissue.

The following are the four conjunctival cysts which I have observed:

1. Young lady, 17 years old, under the left upper lid a tumor 11 mllm. long, wider on both ends than in the centre, movable

with the conjunctiva. The transparent but slightly straw yellow. This was a glandular cyst. I am sorry I cannot find the microscopic slides of this case.

2. Man, 29 years old. A year previous R. received superficial injury by powder. Small vesicle formed in conjunctiva between caruncle and cornea, nearer the former. Size of a pea, movable. Contents transparent, colorless. The sections show the anterior wall of the cyst. It is lined with one layer of flat endothelial cells.

3. Lady, 49 years old. Small colorless cyst in lower inner quadrant, movable. The sections show the whole cyst and the surrounding conjunctiva. One layer of endothelial cells. Some leukocytes and lymphocytes in the coagulated contents.

4. When examining an eye enucleated by a colleague for pneumococcus ulcer I found several inclusion cysts. The specimens show round enclosures of epithelial cells within the conjunctiva which have partially broken down in the centre and thus small cysts are formed.

Papilloma of the conjunctiva like that of other parts of the body consists of connective tissue papillæ containing bloodvessels and covered with proliferating epithelium. These tumors presenting the well-known cauliflower-like arrangement are not very frequent in the conjunctiva. They seem to have a predilection for the nasal side, especially the plica semilunaris and the caruncle. They are prone to recurrence, and may assume the character of a true epithelioma and grow into the depth.

I have had occasion to observe two such cases in my own practice; one further specimen I owe to the kindness of Dr. E. Saxl, who has promised the history of the case.

In the specimens which I have brought for your inspection you will see the well-known arrangement of connective tissue, bloodvessels and epithelium. One specimen stained with orcein will give you an idea of the large quantity of elastic fibres found in the connective tissue of the papillæ. One of the specimens comes from a gentleman about 40 years old. The tumor sat on the plica semilunaris. No relapse.

One specimen, taken from a lady 27 years old, 2 years ago, is rather peculiar. There was a flat tumor situated on the conjunctiva of the left eye. It started from the semilunar fold and reached almost to the cornea. Its histological condition reminds one most of what Hancock and Lister call epithelial plaques; but the papillomatous character of this tumor is easily recognized. There has been no recurrence thus far.

TWO CASES OF RUPTURE OF THE EYEBALL WITH
DISLOCATION OF THE LENS UNDER THE
CONJUNCTIVA AND EJECTION
OF THE LENS FROM
THE EYEBALL.*

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Translated by Adolf Alt, M.D.

Subconjunctival dislocation of the lens is not an every day occurrence and the literature on this subject is not very extensive. Therefore, there is good reason to report a new case.

Before, however, describing the case which I had occasion to observe in the University Eye Clinic at Munich, I wish to give a short résumé of the pathology, diagnosis, prognosis, etc., of subconjunctival dislocations of the lens, but only of those with a traumatic origin.

As dislocation of the lens we consider every change in its position by which the optic system of refracting media loses its centration necessary for the normal act of vision. The dislocation depends on the rupture of the suspensory ligament of the lens, the zonule of Zinn, which is most frequently brought about by a severe traumatism. If at the same time the sclerotic is ruptured it may happen that the lens is either thrown out of the eye through this scleral wound or pressed under the conjunctiva and there retained. This depends on the force and direction of the trauma. Still a certain regularity concerning the scleral rupture has been observed. It is in general the zone between the insertions of the 4 recti muscles and the corneal margin in which these traumatic ruptures of the sclerotic are almost always situated, a fact which is rather strange in view of the anatomical conditions.

Schwalbe in his text-book of the anatomy of the organs of sense says as regards the thickness of the sclerotic: "The thickness of the sclerotic is greatest directly around the optic nerve entrance. Here it is from 1 to 1.2 mllms. From here towards the corneal margin the thickness of this membrane grows gradually less. Only where the tendons of the eye muscles join the sclerotic it is somewhat thicker. Since the tendons of the 4 recti muscles spread, also sideways where they join the sclerotic, a

*Wiener Klin. Rundschau, Aug. 30th, Sept. 6th and 13th, 1908.

general increase in thickness results in the scleral zone near the corneal margin. Here its thickness measures 0.6 millms. while at the æquator of the eyeball it had sunk to 0.4 or 0.5 millms. The sclerotic is, according to Sappey, thinnest (0.3 millms.) where it is covered by the tendons of the eye muscles."

A priori we should expect the sclerotic to tear at its thinnest place; this would, however, not be the region of the insertion of the 4 recti muscles, but the zone between them and the æquator.

Furthermore, it has been observed that the scleral ruptures always run parallel with the corneal margin, are more or less ragged and occur especially in people who have reached a certain age (not more than 40 years).

As to the place where the lens comes out the observations vary considerably. It has been found dislocated inward, up- and inward, up- and outward, outward, and down- and inward. The dislocation up- and inward is the most frequent according to the authors.

L. Müller discussed in an extensive manner the rupture of the corneoscleral capsule through blunt force on the basis of his own observations and those of others as well as of experiments made on the eyes of rabbits, dogs, pigs and horses. Twelve eyes were examined anatomically and microscopically regarding the nature and location of the rupture. In 28 of his own cases the point of attack was known, in 17 unknown; 5 times it lay outward, upward, inward and upward; 3 times in- and downward; twice down and twice down- and outward. In 17 cases the middle of the rupture lay about 90° from the point of attack; 3 times the distance was smaller, 5 times greater. In about 2,500 eye patients one scleral rupture was observed which in one-third of the cases was due to cow horns, in half of them due to other blunt objects, 5 times to sharp objects and once to a stroke with a whip. The right eye was affected 14, the left 28 times, in one case both eyes suffered at the same time. The lens was normal 8 times, in 5 cases nothing was known as to its condition, in 1 case the lens capsule was torn without dislocation, once the lens was dislocated into Tenon's space, once into the vitreous body, 7 times atrophy resulted, 3 times subluxation of the lens, in 20 cases a coloboma of the iris resulted, in 4 cases aniridia, twice iridodialysis.

In 14 cases the results were favorable, in 38 unfavorable. Secondary detachment of the retina occurred in 2 cases.

Müller draws the following conclusions:

1. The point of attack on the eyeball is but exceptionally below, usually inward or upward.
2. The patient usually makes no defensive movements, neither are the lids closed, nor the eyeball turned upward.
3. The rupture concerns either the cornea or the sclerotic in the proportion of 2 to 5.
4. In young people the cornea is torn as a rule, in older people the sclerotic.
5. Direct corneal rupture is as frequent as the indirect one; the direct scleral rupture is extremely rare, a scleral rupture is almost always an indirect one.
6. The indirect scleral rupture is no counter-rupture, but lies midway between the points of attack and support in circles which unite these two points, that is, vertical to the so-called æquator of stretching (Dehnungsæquator) in the "meridian of stretching."
7. If this meridian passes through the cornea the rupture evades the cornea and passes around it through Schlemm's canal, for
8. The region of Schlemm's canal is especially favorable to a rupture, because the trabecular tissue of the iris angle replaces so to speak a part of the dense scleral tissue.
9. The frequency of the locality of the ruptures, up and inward, is due to the trochlea, since it influences at a circumscribed place the eye capsule which is tensely stretched by the intra-ocular pressure in the same sense as this pressure does.
10. Ruptures going through the canal of Schlemm in part or wholly must be called typical. They still lie in the area of the anterior chamber.
11. The direction of the corneal rupture shows no regular relation to the trauma.
12. A partial rupture of the sclerotic consists in a rupture of the sclerotic proper with intact episclera. It does not prove that the tear begins in the innermost layers of the sclerotic proper and ends in the outer ones. It only proves that the sclerotic is torn away from the episclera.
13. A retroversion of the iris does not take place when the rupture is a typical one.
14. The lens leaves the eyeball within an unchanged or a torn capsule. In typical cases the course lies between iris and ciliary body, the iris being torn at its root.
15. The prognosis of a corneal rupture is not as unfavorable

as that of a scleral one. Of the latter there is one favorable case to three unfavorable ones.

16. An operation for the subconjunctival dislocation of the lens should be put off to the time when the scleral wound is healed. Enucleation should be done only when the eye remains injected and painful on pressure or when sympathetic ophthalmia makes its appearance.

17. Among the 62 cases of rupture treated by him only one of sympathetic ophthalmia occurred. Of 17 cases of sympathetic ophthalmia following rupture recorded in literature in 9 it followed an open rupture, in 8 cases the conjunctiva, also, was injured.

As a rule, the lens remains lying directly where it has left the eye and raises the conjunctiva like a bubble. Yet, the position of the lens does not justify the opinion that the scleral rupture is found in the same place, because cases have been observed in which it had left its original place, as Briolat reported one in which the lens originally dislocated in- and upward had wandered downward to between the eyeball and lower eyelid.

Let us now consider the mechanism of subconjunctival dislocation of the lens. The most frequent causes are heavy strokes which hit the eye whether the patient hurts himself with a blunt object, or the eye is struck by a stone, a piece of wood, a cowhorn or any other object. The researches of Schroetter and Arlt show that when the eyeball is struck from below and outward, the scleral rupture must be in and upward; when, however, the upper outer part of the anterior scleral zone is struck, the rupture must result downward and inward. Arlt insists upon it that the eyeball pressed together in a certain direction will momentarily be stretched to the highest in an æquatorial circle lying at right angles to the direction of the stroke; this, of course, supposes that the eyeball is struck in the direction of an axis. If the point of the attack is considered a pole, the direction of the stroke as the axis of the sphere, the eyeball must be stretched in the æquator of this. According to this scleral rupture would have to occur in a place different from the direction of the stroke. When an eyeball is compressed in and upwards from below and outward it would be stretched most in the æquatorial plane at right angles to this direction. The direction of this plane is down and inward from up and outward, the sclerotic must be ruptured therefore either up and outward or down and inward, etc.

Yet many cases prove that in practice the actual rupture does not correspond to these theoretical considerations. An explanation given by Manz (*Zehender's Klin. Mtsbl.*, 1865, p. 170) says that the eyeball being pressed against the orbital wall is protected where it is in contact with this, the protection is wanting when the orbital wall does not cover the eyeball. To this must be added that in that particular region the structure of the sclerotic is especially favorable to a rupture. The rupture is concentric with the corneal margin and not far distant from it.

When discussing 2 cases of subconjunctival dislocation of the lens, one of which was due to a punch with a cow's horn, the other to a stroke with an iron bar, Briolat concludes that a traumatic subconjunctival dislocation of the lens can occur only when the force does not strike the eyeball exactly in the direction from in front backwards. The rupture is not due to the pressing of the eyeball against the orbital wall, but to the compression of the fluids within the eye. The sclerotic is ruptured where its thick and thin zones join each other.

By the pressure from below the lens is ejected and slips under the conjunctiva where it remains, unless the conjunctiva is, also, torn. Then the iris and neighboring tissues fall between the wound lips. Most of the subconjunctival dislocations of the lens occur while the patient stoops, or as is not infrequently seen in the country, are produced by the horns striking the eyeball when the cattle throw their heads upward.

The lens may get under the conjunctiva within its capsule, as is probably most frequent, or the capsule bursts and the lens alone comes out. In this case the lens fibres soon become opaque, in the former the lens has been found to be transparent even weeks after the accident.

Alt has given a description of such a dislocated lens. It was not known how long the lens had been dislocated. Yet, the part which refers especially to the structure of the lens deserves to be given verbatim.

"The conjunctiva covering the lens is changed to a very dense, very vascular tissue containing much pigment. The lens capsule is firmly adherent to the surrounding conjunctiva, quite wrinkled and undoubtedly thickened. It can be seen on the inner side and over two thirds of the outer side of the lens; no further in any of the sections. It was evidently torn in a meridian near the æquator, and wrinkled towards the sound part. No normal capsular epithelium can be found. Under the capsule lies a firm

spindle cell tissue, very similar to the cornea with some large round cells. There are lines which with all probability are new-formed bloodvessels. The adjacent part of the lens is opaque and anular. The structure of the lens fibres can still be easily recognized. Between the fibres lie drops of Morgagnian fluid and giant cells as O. Becker has described them. The æquatorial diameter of the lens is smaller than normal, the meridional one seems increased. The firmness and density of the newformed tissue, the perfect covering over of the wound with epithelium and the great retraction of a cyclitic membrane make it certain that the injury had occurred at least 3 or 4 weeks before the enucleation, perhaps, even much longer."

The lens is cataractous and shows the changes which according to Becker are observed after discussion of the capsule. Yet, some cases have been reported in which the lens in its capsule under the conjunctiva remained clear for years, in others it became absorbed, in some calcareous.

Whether the conjunctiva is torn or not during the traumatism depends on the force and on its elasticity.

The behavior of iris, ciliary and vitreous body varies in these cases. The iris may remain uninjured and only be tilted backwards, so that there seems to be a coloboma. Usually, however, the part of the iris lying close to the scleral rupture follows the lens and with a part of the ciliary body is incarcerated in the wound. The remainder of the iris bereft of its support floats hither and thither with the movements of the eyeball. Even the whole iris is sometimes thrown out. This may happen with an intact conjunctiva, proving its great resistance, for it must be an enormous force which can tear the whole iris from the ciliary body and throw it together with the lens outside of the eyeball. Parts of vitreous body are often found in the wound. A loss of vitreous body so great as to lead to intraocular hæmorrhage rarely occurs with subconjunctival dislocation of the lens, because the conjunctival sac is filled by the lens and plugs the scleral rupture, unless the conjunctiva is, also, torn and the lens ejected altogether. In the latter case hæmorrhages are more frequent.

In the beginning the diagnosis of a subconjunctival dislocation is mostly quite difficult, sometimes impossible, because its symptoms are hidden by the acute inflammation following the traumatism, chemosis of the lids, vehement injection and swelling of the conjunctiva and probable intraocular hæmorrhage. As

with every other contusion of the eyeball the patient at the moment the injury is received suffers severe pain, subjective photopsiæ, and sudden loss of sight; after a few days he has the sensation as of a foreign body at the inner upper quadrant of the eyeball.

By all these symptoms the possibility of a subconjunctival dislocation of the lens may be suggested, the more if an oval, resistant elevation is found in that place. The cornea is always uninjured and can easily be flattened by the pressure of the finger because the blood can give way to the pressure since the iris is torn and the lens wanting.

When the inflammatory symptoms have yielded to treatment, there can be no longer any doubt. At the upper, upper inner and rarely, upper outer corneal margin a tumor of the size of the lens is found covered with conjunctiva the bloodvessels of which are greatly enlarged. This tumor is usually yellowish and transparent, the lens is sharply defined, sometimes, from an accumulation of fluid, slightly fluctuating. The patient complains of feeling of pressure at the seat of the tumor, of the feeling of a foreign body and of an obstacle to the movements of the eye.

The main point in the diagnosis is, however, always in demonstrating that there is no lens in the eye. Purkinje's reflex images are wanting, accommodation is absent and the hypermetropia existing can be improved by cataract lenses.

The tumor might be mistaken for a cyst when vision on account of retinal complications is extinct and an ophthalmoscopic examination is rendered impossible by an intraocular hæmorrhage; especially when it is translucent, does not appear yellow and fluctuates. Such cysts are not rarely found after contusions of the eyeball when fluids have come out or when through a small scleral rupture some vitreous body has penetrated and become incapsuled. Yet, such mistakes may be avoided by considering the whole picture, furthermore, a careful incision made after some time would show the error. Another help to the diagnosis lies in the iris, which by its defect usually shows the way the lens has gone.

Considering the prognosis of subconjunctival dislocation of the lens we must not forget that such an eye has been subjected to a very severe injury in which not only the sclerotic was ruptured, but the whole eyeball was strongly compressed. By the pressure the contents of the eyeball are forced out through the opening, the aqueous humor runs out, vitreous body protrudes,

the tissues are pressed into the wound and there incarcerated. The bloodvessels, also, cannot withstand this pressure, they tear and the blood enters the tissues and the interior of the eyeball. When the blood gets between choroid and retina a detachment must result varying in size according to the quantity of blood. Furthermore, a liquefaction and subsequent shrinking of the vitreous body may cause a detachment of the retina. In view of the serious consequences which such an occurrence has for the patient's vision, and that we have no certain remedy against it, such conditions would render the prognosis of a subconjunctival dislocation of the lens quite bad, if luckily these unfortunate complications were not rarer than one would think.

When the injuries to the neighboring tissues are not very great and the eye has not suffered any serious interference with its nutrition, the rupture of the sclerotic and the subconjunctival dislocation cause by themselves almost no reaction. The easy manner in which scleral wounds heal has even been made use of in cataract operations by making the incision in the sclerotic instead of the cornea.

The manner in which the healing progresses, also, has some bearing on the prognosis. If the prolapsed tissues remain incarcerated in the wound they produce a traction which may lead to inflammation. They may cause iritis, cyclitis, affections of the retina and vitreous body and finally phthisis of the eyeball. This may not only lead to blindness of the thus affected eye, but further may affect the fellow eye with sympathetic ophthalmia. The danger of this latter affection can probably in most cases be averted by operation.

A radiary tearing of the iris or its solution from the ciliary body is later on felt disagreeably on account of the dazzling and on account of the defective accommodation. The dislocated lens itself, strange to say, causes but very slight symptoms and can be borne for years and even a lifetime without damage.

The prognosis as regards perfect vision is not as good. On account of the absence of the lens accommodation is always lacking. Such defects, however, patients who have been operated on for cataract have also to bear, and they may be more or less corrected by cataract lenses.

The treatment has to consider in the first place the dangerous conditions, as the rupture of the sclerotic, the injuries to the surrounding tissues, the hæmorrhage into the anterior chamber, under the conjunctiva and into the subcutaneous connective tissue.

In order to bring about a healing of the scleral rupture and to prevent further prolapse of vitreous body it will be usually sufficient to keep the patient in bed and put on a protective bandage, by which the absorption of the blood is also accelerated. In some cases a scleral suture may be indicated.

The accompanying injuries to the neighboring parts of the eyeball as well as all subsequent inflammatory symptoms must be treated with the general means of antiseptics and antiphlogosis.

Only when the eye is free from all irritation, and never sooner than 6 or 7 weeks after the injury, the dislocated lens can be taken care of. Since, as stated, its presence causes but very slight discomfort, indolent patients usually do not consider it worth while to have an operation performed.

When the sac is opened too soon a very severe inflammation may result and even lead to panophthalmitis. Furthermore, the young scar is so tender and little resistant to withstand the intraocular pressure, thus there would be danger of its reopening and of further prolapse of vitreous body. In one case (*Canada med. Journ.*, 1895) after the opening a prolapse of vitreous body occurred with very severe inflammatory symptoms which subsided only after 8 or 10 days.

After the operation both eyes should be covered by a protective bandage for one or two days, since even then the thin scar may become stretched, especially if by sudden coughing, sneezing, pressing or vomiting the intraocular pressure is momentarily increased.

The operation consists in lifting up over the tumor a small fold of conjunctiva and incising it with sharp pointed scissors, which is usually followed by spontaneous delivery of the lens.

Sometimes the lens is absorbed under the bandage. The dazzling due to large defects in the iris or when the whole iris has been torn out demands stenopæic glasses.

When the lens has been thrown out of the capsule and the latter, wholly or in part, remains behind, a secondary cataract may be formed and demand a discission.

If in spite of strict antiphlogosis a panophthalmitis should develop, and when it can no longer be prevented, it should be rather fostered so as to free the unfortunate patient as quickly as possible from his pain. Luckily this happens but rarely.

In the correction of the aphakia any astigmatism which may be present must, of course, be taken into consideration and either the convex glasses be tilted as recommended by Zelvender

(XV. *Versammlung der ophth. Gesellschaft*, 1883) or cylindrical lenses be added.

Another correction of the astigmatism is practiced by Masson (*étude sur l'astigmatisme*, 1883). He found that with an astigmatism of 3.5 D. the patient could see as well through a stenopæic hole as through his convex lens. When the astigmatism was smaller than 3.5 D. the patient's vision was better with the convex lens than through the stenopæic hole. A combination of the convex glass with the stenopæic hole gave vision equal to the sum of both corrections. Cylinders did not give as good vision.

After what has been said, such an eye, having escaped detachment of the retina, panophthalmitis, etc., being free from irritation, although it has lost its accommodation, should possess an ideal black pupil, that is, the refracting media should be perfectly normal; and this is usually the case.

It was, however, not so in my case which I shall describe and which on that account is of particular interest, although in other points it does not differ much from the typical cases of subconjunctival dislocation of the lens, hitherto observed.

G. F., 49 years old, hostler, came to the Royal University Clinic at Muenchen on February 7th, 1907, stating that about Christmas, 1905, his right eye had been injured by the horn of an ox. He had been taken care of in the hospital at Erding, where a yellow spot was seen on his eye. This spot had since grown larger.

Status praesens.—The tarsal conjunctiva shows chronic hyperæmia and some Meibomian infarcts. The bulbar conjunctiva is sclerosed and of a yellowish color. Inward from the cornea and slightly upward a whitish yellow elevation is seen of the size of a cherry pit. It is highest near the cornea and gets thinner up and inwards. Several bloodvessels grow into this tumor from the inner canthus, between them some jelly-like lighter parts shine through. It looks as if the corneal margin reached over the margin of the elevation, since a whitish yellow sickle about 2 mm. wide is visible in the angle of the anterior chamber. In the depth fine silver gray and whitish threads are going to this sickle which oscillate with the movements of the eye. Where the tumor joins the cornea the iris is tilted back toward the sclerotic so that a broad coloboma results. There is a good red reflex from the background of the eye. V. R. with +11D.=5/35. V. L. with -1D.=5/7.5.

The diagnosis was subconjunctival dislocation of the lens.

By an opening in the conjunctiva the lens was easily removed. It was cataractous, its capsule unaltered.

Bandage and uneventful healing.

February 28th. The wound is closed, no bloodvessels enter it. The conjunctival elevation is collapsed and the conjunctiva in its place is wrinkled, yellowish white and in and upward the iris pigment is seen through it, since there is a scleral staphyloma. The grayish white threads mentioned above go to this iris tissue which is firmly united with the sclerotic. The fundus is clearer and as far as can be seen the papilla is normal.

The ophthalmometer shows an astigmatism of 6D. axis 30° temporally. Central vision with $+11D.\odot+4c.$ axis $30^\circ =$ almost 5/15.

Epicrisis.—This was one of the cases which heal easily without any special treatment. The patient was but little incommoded by the dislocated lens under the conjunctiva; aside from a chronic conjunctivitis its presence caused no disagreeable symptoms. He did not come to the hospital on account of pain in the eye, but because he noticed that the tumor grew.

As regards the situation of the lens, this case is very much like the last one of Lederer's in which only two-thirds of the lens lay under the conjunctiva.

Especially interesting is the alteration of the pupil. Filling the whole iris defect from out and inward fine glistening threads are seen to run up and inward in the shape of a triangle with base out and downward. These are the fibres of the zonule of Zinn. Without causing any irritation they are fastened in the scleral scar. They must, however, interfere with vision. Aside from the dazzling, their presence must account for the low vision, the more since no serious lesion can be detected in the retina with the ophthalmoscope.

We have, thus, in this one of those cases of a rare severe injury to the eyeball with a relatively favorable result, thanks to the integrity of the conjunctiva which by retaining the lens made it plug the rupture and on the other hand afforded a perfect protection against bacteria which might have caused pus formation.

That, however, not only such cases in which the conjunctiva remains unturned are favorable, but, also cases in which it is torn is shown by my second case which I observed in the clinic.

Of course, the prognosis is not quite as good as with an un-

injured conjunctiva since, aside from the greater force and consequent greater injury to the eyeball and aside from the more probable loss of vitreous body in these cases the lens does not act as a plug in the wound, the danger of a panophthalmitis is very great.

The treatment is the same as with a subconjunctival dislocation of the lens; of course no removal of the lens is necessitated later on as in the former case.

Patient B. H., 73 years old, had been injured 6 years previously by being struck with a piece of wood against the right eye. Severe pains followed and a feeling as if the eye ran out. "Having no time" she went to a physician only 2 days later. The eye was greatly ecchymosed, black looking. The physician gave her drops and an ointment to put into the eye, but did not bandage it. She saw him 3 more times and then gave it up. The eye then improved to the present condition. No operation had been done. She comes to the clinic on account of growing blindness in her left eye.

Stat, praes.—Chronic conjunctivitis. Tear passage normal, L. E. cataracta incipiens, preliminary iridectomy upward; otherwise normal. R. E. cornea transparent and flattened. In the upper quadrant at the corneoscleral junction a moderately broad, semilunar, whitish grey scar. Behind it a segment shaped band about 2 mm. wide hangs down between cornea and iris which is to be explained either as a dimness on the posterior surface of the cornea or a scleral flap healed into the scar. There is no sclerectasia.

The pupil is irregular out- and inward. The iris is covered with large and small pigment spots and shows rarifications and a coloboma-like defect upwards, that is, it is healed into the scar and covered by the band just mentioned. No symptoms of irritation.

The pupil is not quite black. With oblique illumination remnants of the lens can be plainly seen. The lens itself is absent and is found neither in the vitreous body nor under the conjunctiva. It must certainly have been ejected from the eye when this was ruptured.

In the vitreous body there are numerous floating opacities probably remnants of an intraocular hæmorrhage.

The fundus can be seen clearly. Papilla and bloodvessels show nothing abnormal. Tension is normal.

V. R. E. with +11D.=5/20. Ophthalmometer gives 1.5 D. As axis 35° outward. V. L. E.=5/20. Ophthalmometer gives 0.5 D. As axis 35° outward.

Epicrisis.—In this patient, too, an extremely serious injury healed perfectly without any proper therapeutic measures. The trauma certainly struck the lower quadrant; this may be deducted from the manner in which it was received. A small child threw a piece of wood toward the much taller patient. Undoubtedly it was directed from below upward and compressed the eyeball in that direction. A scleral rupture occurred in accordance with the above explained theory. The heavy stroke together with a non-resistant conjunctiva (the patient was at the time 67 years of age) afforded free exit to the lens through a scleral and conjunctival tear.

In conclusion I should like to mention some interesting cases from literature.

Mitvalsky reports in extenso 13 cases of subconjunctival dislocation of the lens and adds a general discussion of the subject.

The rupture in the typical place near the corneoscleral margin is often not large enough to permit of the passage of the whole lens, it therefore is sometimes caught between the wound lips. In 12 cases the dislocated lens was within its capsule, in one the latter remained within the eye. The lens lying under the conjunctiva causes an inflammatory reaction by which it becomes attached to the surrounding tissue. In one case in its place a cyst was found within the capsule which was connected with the anterior chamber. The dislocated lens becomes absorbed down to the nucleus, especially when the scleral rupture is closed. In one case Mitvalsky found the whole lens calcified. He gives an extensive description of the fate of the scleral wound. Of the cases observed by him 3 only had some vision left. The lens should be extracted as soon as the subconjunctival hæmorrhage does not cover it any more. The removal is indicated especially when the scleral wound gapes, because the lens prevents its closure. After the removal of the lens sutures should be applied without paying much attention to the iris, except in perfectly recent cases when the iris is not yet adherent to the wound. Sympathetic ophthalmia did not occur in any of the cases.

Jacquau reports on a case in which the lens had been dislocated under the conjunctiva by a cow three weeks previously. The capsule was intact and no vitreous body was lost. The iris was invisible, sight lost. He intended to remove the lens only after perfect healing was accomplished.

Schlodtmann had occasion to make the microscopical exam-

ination of an eye which had been hit by a cow 5 weeks before enucleation. The sclerotic was ruptured behind the insertion of the external rectus in an oblique line from in front and inward back- and outward. The lens was found between the superior oblique and the external rectus, its posterior edge was about as far from the posterior pole of the eye laterally as the optic nerve lay nasally. The attachments formed between the lens and surrounding tissue were comparatively small, there seemed to be but little tendency to inflammatory reaction. Only the posterior capsule was more firmly attached to the sclerotic. The lens was granular, opaque and showed many fissures filled with hyaline masses. The capsule was intact, its epithelium well formed, in places thickened and giving the appearance of capsular cataract. It reached far behind the æquator on the posterior capsule.

Bednarski examined microscopically a subconjunctival dislocation of the lens with double iridodialysis. The lens lay up- and inward. The inner half of the iris was torn from its insertion and a second small iridodialysis was found in the outer half. The dislocated lens was surrounded by a thin layer of connective tissue which came from the scleral scar. The bridge of iris between the two dialyses only showed increased pigmentation. The corneoscleral margin was deeply indented; corresponding with the small dialysis there was a slight ectasia. The iris was torn exactly at its ciliary margin. Bednarski thinks that at the moment of action of the blunt force the small dialysis was formed. Later on the sclerotic was ruptured and the inner half of the iris tore off probably aided by the passage of the lens.

Wordsworth reports the case of a man who was struck in the face with a fist and thrown to the ground. The nasal bone was broken and both eyes were ruptured. Both lenses lay under the conjunctiva at the upper inner side of the corneal margin. The scleral rupture ran concentrically with the upper inner corneal margin. The depth of the anterior chamber was normal, the pupils were drawn upward and filled with blood. Two weeks later the lenses were removed. V. R. E. with +10.5 D.= 20/20; L. E. 20/40.

According to Oeller a man suffering from religious mania tried repeatedly but without success to gouge out his eyes with his thumbs. Yet, he succeeded in compressing his right eye in such a manner that it became phthisical, and in his left eye he caused a total irideremia and dislocation of the lens under the conjunctiva. Some vision was preserved in the left eye.

Saint-Martin found in a man who had lost vision four years previously in 3 days following an injury with a piece of wood; aside from small peripheral irisectasias, the lens was wanting. Glasses gave $V.=1/2$. He assumed that the lenses had been dislocated under the conjunctiva and had been absorbed.

Mercanti saw a scleral rupture and incomplete dislocation of the lens produced by the falling of a bundle of sticks. Two-thirds of the lens lay under the conjunctiva. In other similar cases only one-third was found outside. Mercanti assumes in his case that the great rigidity of the conjunctiva prevented it from coming altogether through the scleral rupture.

The case reported by Lederer in *Zehender's Klin. Monatsbl.* is analogous to Mercanti's. Two-thirds of the lens were outside of the scleral rupture which was situated up- and outward. He says "in order to explain the incomplete dislocation of the lens we must assume that the force compressing the eyeball which ruptured the sclerotic sooner than the elastic conjunctiva, acted for too short a time to be able to fully surmount the resistance of the conjunctiva."

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MEDICAL SOCIETIES.

PAPERS READ AT THE THIRTY-FIFTH MEETING OF
THE GERMAN OPHTHALMOLOGICAL SOCIETY
AT HEIDELBERG, AUGUST 5, 6 and 7, 1908.*

Reported by Privat Docent Dr. W. Stock, Freiburg.

Translated by Adolf Alt, M.D.

(Continued from September number.)

Salzer (Muenchen). Experimental contributions on keratoplasty.

Since the author has propounded the opinion that in transplantation of the cornea, analogous to all other tissues, the transplanted flap is gradually replaced by elements immigrating from the neighborhood, and that in this way we can explain the regular non-success of total keratoplasty in cases of total adherent leucoma as well as the fact that in partial keratoplasty or in total keratoplasty in clear animal's cornea the flap remains clear, our knowledge on transplantation has been greatly enlarged. Yet, the great majority of the really successful transplantations (thyroid, ovary, milk gland) are simply cases of autoplasty, that is, simple transpositions in one and the same animal, while homoplasty is much less hopeful and the possibility of success in heteroplasty can really only be counted with in low animal species. We must, therefore, still consider it as a physiological impossibility to transplant a rabbit's cornea onto the human eye with full preservation of structure.

The transplantation of human cornea according to Fuchs' and Zirm's results evidently offers better chances that larger portions of the flap may remain preserved. Yet in the cases of both authors there was no total adherent leucoma, and especially the deeper layers of the cornea were more or less preserved (parenchymatous keratitis and burn with lime). Such cases the author years ago put on a par with the experiments on clear animal's cornea because there is a possibility of regeneration of clear corneal substance into the transplanted tissue.

The author believes that in such cases von Hippel's less dan-

*Klinische Monatsblaetter fuer Augenhlk. August, 1908.

gerous keratoplasty, especially if made with the cornea of a newborn human individual, must give equally good results.

He mentions the results of his former experiments with partial keratoplasty which he finally abandoned because, with few exceptions and in spite of all care, the little flaps fell off. The regeneration of the corneal tissue could be observed on the remaining defects. Superficial defects are filled up with epithelium, the regeneration of the superficial layers of the cornea is extremely slow. When, however, Descemet's membrane is injured its endothelial cells show an extremely vivid and active regenerative proliferation. In the one successful case of partial keratoplasty the author could observe death of nuclei especially at the edges of the flap and in the neighborhood a slight proliferation of the corneal cells.

Meanwhile, Ribbert has overcome the difficulties in technique by implanting flaps from guinea pigs into pockets made in the cornea of rabbits. Although these flaps clinically remained clear, the death of cells and their replacement by rabbit's cells could be observed microscopically. Ribbert did not state whether the fibres, also, died off.

Making use of Ribber's technic the author has continued his previous experiments and at first implanted membranes from the egg. If no suppuration followed, the egg membranes lay for many months clear in the hardly altered cornea, only a few vessels grew towards the membrane. Microscopically bloodvessels and many cells were found in the membrane.

The nuclei in the cornea were greatly increased in number, the immigrated cells mostly came from bloodvessels, some, also, from the fixed corneal cells. Very slowly the membrane is digested by the cells. One of them was clinically hardly altered after 4½ months.

These experiments prove that dead organic substances clinically remain as well in the cornea as a corneal flap.

Further on he implanted flaps from young rabbits, that is from the same species. Although these flaps remained clinically perfectly transparent for two months, they showed microscopically very great changes. At the margin cysts had then formed by the epithelium which pressed aside a part of the flap. Otherwise, the flaps were perfectly united with the tissue which filled the angles of the pocket and with the wounded lamellæ. Large portions show no nuclei, into others an immigration of corneal cells has taken place. There are absolutely no inflammatory

signs. Descemet's membrane shows many folds and is considerably shortened, the fibrillæ are bent, swollen and run into each other in such a manner that the main part of the flap looks much denser than the surrounding tissue.

In one case healing was impure, yet after two weeks the eye was free from irritation, the flap partly transparent. Microscopically an epithelial cyst was found on the surface and from its posterior surface a bud of granulation entered into the flap which was otherwise well preserved.

These cases prove that although the flaps remain clinically clear, they show very considerable changes in the sense of the author's previously expressed opinion. He is continuing these experiments.

Igersheimer (Heidelberg). Experimental researches concerning the action of atoxyl on the eye.

The relatively large number of reported cases of more or less complete blindness following the exhibition of atoxyl induced the author to study this question experimentally on animals. He introduced the poison 1, locally into the eyes of rabbits (11 animals), and 2, subcutaneously in 7 dogs and 7 cats.

1. Injections into the anterior chamber did not produce lasting pathological changes. But 1 milligram and more atoxyl injected into the vitreous body caused severe macroscopic and microscopic alterations; and, even when ophthalmoscopically nothing was visible (after injection of 1-10 of a milligram) degeneration of the ganglion cells and of the optic nerve appeared which proves that atoxyl when in direct contact with the nervous elements of the retina even in small doses, causes their necrosis.

2. While after subcutaneous injections dogs showed very few general symptoms, cats showed an always equal and very interesting sequence of symptoms: slowness of all movements, ataxia, spasms, spastic parapareses. In the eyes especially, besides the frequent occurrence of a conjunctivitis and a single toxic anomaly of the pupil, nothing pathological could be noticed. Yet, the anatomical examination showed if not severe yet certain changes in the retinal ganglion cells (chromatolysis, shrinking of the nuclei, cell death) and a very interesting process in the optic nerves. This was what Schreiber termed the "Marchi reaction" which is characterized by an intense black coloration of the mar-

row sheaths. Histological examinations of the central and peripheral nervous system made in conjunction with Dr. Itami showed severe cell changes in the brain and medulla spinalis and moderate Marchi reaction in the peripheral nerves.

As regards the primary locus of attack of the atoxyl it is still undecided whether the cell degenerations in the central nervous system on the one and in the retina on the other hand are co-ordinate processes, which the results of injections into the vitreous body seem to point to, or whether the optic nerve and retina degenerate secondly, which seems probable on account of the much more severe processes in the central organ.

Wessely (Wuerzburg). Experiments on the epithelia of the eye.

Wessely wanted to find out whether Fischer's injections of scarlet oil or sudan oil would induce epithelia, other than those of the rabbit's skin, to proliferate. As object of his experiments he chose the epithelia of the eye and its adnexa. While injections of scarlet oil into the cornea remained without result and produced but insignificant changes (small iris cysts, etc.) in the anterior chamber, extensive epithelial proliferations appeared on the conjunctival epithelium, but strange to say in two places only, namely, where the cylindrical conjunctival epithelium proper passes over into the flattened epithelium at the lid margin and at the corneal margin. Although the oil spread out pretty evenly under the whole extent of the conjunctiva, epithelial proliferations did not appear in any other locality, only the connective tissue showed proliferation, formation of epithelial cells and of formations similar to giant cells. This seems a new phase by which to judge the mode of action of scarlet oil and of the peculiarity of the parts where one form of epithelium joins another, parts which as we know from pathology are particularly prone to proliferation. The Meibomian glands also showed epithelial proliferations which took their origin from the excretory ducts. The lacrimal gland showed no reaction.

Fleischer (Tuebingen). Cytological examinations of the cerebrospinal fluid in eye patients.

In order to find out whether the cytological examination of the cerebrospinal fluid is of any value for ophthalmology, especially for the differential diagnosis of luetic affections, the author

has made a series of researches. He stated it as a fact that in a certain percentage of individuals previously infected with lues, even if there are no nervous symptoms, a lymphocytosis of the cerebrospinal fluid is found. In order to prove the correctness of his diagnosis most of his cases were examined for lues by A. Leber, Berlin, according to the Wassermann method.

The author examined 33 cases. In 11 lues was certain and in all of them the cytological examination gave a positive result. In 5 cases lues was suspected; these, too, gave positive results. Of the other 17 cases in which there was nothing pointing to lues 9 gave a positive result.

It is, therefore, impossible to use the cytodagnosis of the cerebrospinal fluid for the differential diagnosis of luetic eye diseases, since in cases of inflammatory diseases which are not of a luetic nature a lymphocytosis of the cerebrospinal fluid may be present. On the other hand Wassermann's serodiagnosis can be confidently recommended for eye diseases.

Lohmann (Muenchen). On the question: is the contraction of the pupil in near focussing related to the convergence or the accommodation.

Having reported a case of motionless pupil in convergence with post-diphtheritic paralysis of accommodation the author raises the question whether the contraction of the pupil in near-fixation is synergic with accommodation, or with accommodation and convergence, or whether the opinion is correct according to which this contraction of the pupil is synergic with convergence alone.

He made known a simple modification of Hering's experiment on this question which is apt to remove the objections which had been raised to this experiment. Lohmann could change the accommodation with an unchanged position of the eyes with the method devised by Hering and at the same time an observer could watch the behavior of the pupil. In Lohmann's experiments the pupil variations amounted to about 0.6 mllm. Only extensive variations in convergence which, however, were absent in these experiments could have produced such pupil changes.

A variation in the size of the pupil takes place alone with extensive changes in accommodation, but apparently not with small changes which lie within the relative range of accommodation. Vervoort's experiments (1900) showed that accommodation may be taken out of the trias convergence, accommoda-

tion and contraction of the pupil, without a change in the size of the pupil corresponding with a definite focus.

Convergence is not as easily separated according to will from this trias as is accommodation. Experiments with prisms which mean a more or less forcible tearing asunder of the trias will produce purely a change in convergence. However, the amount of pupillary change during this experiment practically points to a dominating influence of the convergence on the size of the pupil.

Lohmann thinks he can conclude that the contraction of the pupil is with the accommodation as well as with the convergence due to an internuclear connection between the sphincter nucleus and the centre of accommodation or convergence. Yet, as far as accommodation is concerned there can only be a partial connection. The accommodation also retains a certain independence in its relation to convergence (relative range of accommodation). Maybe there are furthermore, individual differences in this connection. This might explain why, for instance, Wlotza in his experiments did not get a pupillary contraction even with great variations in accommodation. It may also be that the motionless pupil in convergence in the case related had something to do with an individual variation in the synergic connection between near-focussing and accommodation.

Adam (Berlin). On a new method of treating the blenorhoea of adults.

His method avoids lavages, cauterization, iced compresses and confines itself to the introduction of some bleno-lenicet ointment into the conjunctival sac at first every 2 hours, later on at longer intervals. The ointment consists of lenicet, an acetic acid alum preparation which diminishes secretion and inhibits the growth of bacteria, and of euvaselin, a vaseline with a higher melting point, which for about 2 hours forms on the cornea an excellent cover and thus removes this membrane from the macerating influence of the secretions. Euvaselin is, furthermore, an excellent thing to cover the eye in lagophthalmus, after ptosis operation, plastic operations, etc.

The author has treated 24 eyes of adults with this ointment and observed lasting damage to the cornea in 5 cases only.

Harms (Tuebingen). On prepapillary preretinal haemorrhages.

Harms reports on two such cases, one of which he could

examine anatomically. He found that the hæmorrhage was not only preretinal but, also, intraretinal.

Levinsohn (Berlin). On the cortical centres of the movements of the eye according to experiments on animals.

Based on numerous experiments with irritation and extirpation on the cerebral cortex of 15 apes, the author comes to the following conclusions:

1. The area of innervation of the movements of the eye is very extensive in apes. It comprises in the main the posterior half of the frontal lobe, the angular gyrus and the occipital lobe. In each one of these parts definite foci can be localized from which a pure side movement alone, or one with an up or downward movement can be produced. Although the localization of these foci is pretty definite, it is not possible to localize and limit them off exactly and constantly in every case.

2. The highest excitability resides in a small part lying directly in front of the bend in the precentral sulcus, then follows the occipital lobe, and finally the angular gyrus. The excitability for ocular movements of these parts of the brain is not interdependent, because it is still present for each one after elimination of the others. Ocular movements, therefore are not produced by way of association fibres but by way of cortico-fugal fibres.

3. When the brain cortex is excited the eye movement is primarily produced by an active contraction of the irritated muscle, the inhibition of the antagonist in side movements is of small importance.

4. When the side movements have been suppressed by the excision of the muscles which turn the eye sideways, the movements upward and downward cannot be increased through cortical irritation.

5. After extirpation of one or several or all of the cortical parts governing the eye movements a conjugated deviation takes place, which, however, soon disappears. The faculty of turning the eyes sideways remains.

6. Since after extirpation of the angular gyrus a diminution of sensitiveness in the opposite eye and its surroundings is noticed and after extirpation of the occipital lobe a hemianopsia occurs, we must, in view of the facts that irritating the brain portions lying in front of the precentral sulcus produces even with the

smallest irritation an isolated eye movement and that extirpating this portion results negatively, see the cortical centre of eye movements just in this very part of the brain, while the eye movements elicited from the other parts of the cortex must be looked upon as secondary ones. Yet, since after extirpating several or all of the brain parts which are connected with eye movements a normal position of the eyes is present and the faculty of moving them is not lost, we must conclude that in the ape the cortex cerebri has, generally speaking, no important influence at all on the normal position and the motility of the eyes.

OPHTHALMIC SECTION

OF THE ST. LOUIS MEDICAL SOCIETY.

DR. A. E. EWING, presiding.

Meeting April 8, 1908.

Dr. John Green, Jr., presented, for Dr. Luedde, a patient previously shown to the Section in October or November, with sarcoma of the orbit. Since the first presentation, Dr. Mudd had done a complete exenteration of the orbit, had made a large flap, and sutured the lower portion of this flap to the cheek so that the gap was entirely filled in and there was but little cosmetic defect.

DISCUSSION.

Dr. Carl Barck doubted whether it was a wise procedure in such cases to entirely close the orbit. If there should be a recurrence, it would be at that site and, in conditions as dangerous as sarcoma, the first object and aim was the preservation of life. When the entire orbit was lined by skin grafts, in two weeks' time it would be fairly healed and the orbit was then open to inspection, and in cases of that character the orbit always should be open to such inspection.

Two cases of removal of pieces of steel from the vitreous.—Dr. Carl Barck.

The two cases, I present here, have the common feature, that the foreign body entered through the corneo-scleral margin and the root of the iris, without injuring the lens, and that it was extracted in both through a scleral section.

The first case was injured on the 4th of March. The company

physician, who saw him first, stated, that there was nothing in the eye. Some days later, he went to a clinic. I saw him on the 20th. There was a small scar, one mm. long, in the lower temporal quadrant of the corneo-scleral margin, laterally to the end of the vertical meridian. Pupil dilated (Atr. in clinic) with the exception of a strong adhesion in upper nasal portion. Lens transparent; but a roundish opacity just upon center of anterior lens capsule. I took this to be an iritic deposit, as he had not used any mydriatic during the first days. The vitreous was cloudy, infiltrated with blood. Fundus just about visible, without details. V.=3/60.

Patient was placed before the giant magnet; it caused a sensation of pain. Nothing else. Was sent to Dr. Wells for X-ray picture. Dr. W. did not get a good picture this day and ordered him for the following day. I expected the picture in time, but did not get it. The next morning, when everything was ready for the operation, the vitreous was somewhat clearer, the blood having settled down. I could see with the ophthalmoscope some shine, and located the foreign body in the outer, lower quadrant, close to the bottom, and about in the æquatorial region. As you see, I decided then not to wait for the picture. In narcosis a scleral section was made and the chip was touched by the hand magnet at the first introduction. I heard and felt the click. My assistant also heard it, but remarked that this was due to the magnet having touched the speculum. But the foreign body followed the withdrawn magnet. It is about two lines long, with a sharp end. Weight less than 10 mgrs.

I present this case for two reasons. The healing process was regular; only the mentioned opacity in the center of the lens increased during the first two weeks and had a peculiar appearance. It looked as if there were a number of minute holes in the anterior capsule. Since some days this opaque spot has decreased again in size.

I have here the X-ray picture, which I received three hours after the removal. It not only located the foreign body exactly, but Dr. Wells made also a drawing of the size and form of the foreign body, which proved to be absolutely correct. It affords me pleasure to pay Dr. Wells my compliment in this new achievement. I understand, how he calculates the location, but by what data he can judge the size and the form as exactly as he has done, I must confess I am unable to say, (and as he is present, he may be kind enough to explain to us).

The second case was injured on the 1st of April and seen next morning. A needle of a machine had broken into pieces and one struck the eye. Scar in corneo-scleral margin, outer lower quadrant, slightly below horizontal meridian, irregular, about 2 mm. long. Lens transparent. Nasal two-thirds of vitreous clear. Optic disc and nasal half of retina plainly visible. In lower temporal half of vitreous a large hæmorrhage, in which a shining whitish body can be plainly seen with the ophthalmoscope. Localization: Not far from posterior wall and about in center vertically. I decided not to try the giant magnet, in order not to injure the intact lens, and I believe that I was correct; I could hardly have extracted this foreign body without either injuring the lens or the ciliary body. Operation at noon in narcosis. Scleral section between inferior and external rectus as in the previous case. After introducing the hand magnet I felt the click, but the foreign body did not follow. I believe that it was caught at once, but arrested by the scleral wall, lying cross-wise behind it. A second introduction of the magnet was not easy, because the conjunctival section was smaller than the scleral one; it was the first time I had substituted a Graefe knife for the wider one, I used for years. The second attempt brought the chip into the wound with some choroid in which it was caught, and it was then seized with a forceps and fully extracted with forceps and magnet combined. The healing process was normal. The vitreous is now somewhat more infiltrated with blood, but the fundus in part still visible. Vision today 6/36. The piece is about 4 mm. long, quite thick and weighs about 50 mgrs.

LLEWELLYN WILLIAMSON, M.D.,
Section Editor.

[TO BE CONTINUED.]

EDITORIAL NOTICE.

We are informed that in the near future a volume on Ophthalmic Therapeutics is about to be issued from the pen of Dr. C. A. Wood, of Chicago, in conjunction with a number of collaborators. There is no such original work as far as we know in the English language. The name of the author is sufficient to insure a book of value. We await its appearance with great expectations.

REVIEW.

SPECTACLES AND EYEGLASSES, their form, mounting and proper adjustment. By R. J. Phillips, M.D., 4th revised edition with 56 illustrations. Philadelphia. P. Blakiston's Son & Co., 1908. Price \$1.00.

It is a real pleasure to read this little volume at its new appearance. It is again improved by a number of valuable additions and we gladly take occasion to recommend it to the ophthalmic public as we did with the former editions. ALT.

THE PATHOGENESIS OF TABES DORSALIS.

Williams (*Am. Jour. of Med. Sciences*, Aug., 1908) offers the following conclusions on this subject:

(1) Tabes dorsalis is a secondary degeneration in the posterior columns, due to a chronic meningitis, probably of syphilitic nature. (2) The arrangement of the meninges surrounding the nerve-root render it particularly liable at that point to mechanical or toxic injury. (3) The unequal incidence on different fibres of the posterior root is probably due to unascertained peculiarity of structure or arrangement of fasciculi, rather than to any selective toxic influence. (4) The lesions tend toward resolution and arrest. (5) With this arrest, regeneration tends to occur in the nerve-roots, the amount in the anterior root being considerable, while that in the posterior root is less in amount and is functionally insignificant. This difference is shown to have a basis in anatomic fact. The trophic centre of the anterior root is the pyramidal cells in the anterior horn. Upon the absorption of the meningeal exudate, the cells push out new fibres, which make their way along the old paths to the muscles. In the posterior root, on the other hand, the portion of the fibre distal from its trophic centre, the posterior root ganglion, loses its neurilemma on entering the cord. This absence of neurilemma prevents the regeneration of the fibre, when the trophic centre has recovered function. The regenerating fibres can be shown to stop at the point of reflection of the pia mater at Obersteiner's ring. (6) The otherwise unexplained vaso-motor and cranial nerve symptoms are shown to be necessary concomitants of the tabetic process.